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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,113	03/19/2001	Gabriele Nelles	450117-03033	2990

20999 7590 03/31/2005

FROMMER LAWRENCE & HAUG
745 FIFTH AVENUE- 10TH FL.
NEW YORK, NY 10151

EXAMINER

HON, SOW FUN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/744,113	Applicant(s) NELLES ET AL.	
	Examiner Sow-Fun Hon	Art Unit 1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 74-97 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 74-79, 81-91 and 93-96 is/are rejected.
- 7) ☒ Claim(s) 80, 92, 95 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Rejections Repeated

1. The 35 U.S.C. 103(a) rejections of claims 74-79, 81-91, 93-94, 96 are repeated for the same reasons previously of record in the Office action dated 07/02/04.

Response to Arguments

2. Applicant's arguments filed 11/02/04 have been fully considered but they are not persuasive.
3. Applicant argues that Georger does not teach that a liquid crystal material is aligned on an alignment layer or that a liquid crystal material is aligned.

Applicant is respectfully apprised that Georger, Jr. teaches the alignment (placement) of cells within lithographically defined physical barriers such as microtrenches or wells, and onto substrate-embedded microelectrodes, which permits the precise positioning and controlled growth of cells (column 15, lines 55-70). Liquid crystal is taught to be equivalent to microelectrodes in terms of being a suitable transducer for stimulating cell growth (column 10, lines 45-55). Georger, Jr. is directed to a basic substrate which contains a patterned surface (column 9, lines 20-35) for the selective neurite outgrowth (of cells in the definition of neuron geometry formation) (column 9, lines 35-40).

Therefore although Georger, Jr. fails to specifically teach that the liquid crystal acting as the transducer is aligned by an alignment layer on the basic substrate-embedded microelectrodes, because Georger, Jr. teaches the alignment of cells within microtrenches on substrate-embedded microelectrodes, and that liquid crystal is equivalent to the microelectrodes as a suitable

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transducer for stimulating neuron cell growth, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have placed a neuron in an aligned microtrench comprising liquid crystal, in order to provide for precise positioning and controlled neurite outgrowth.

4. Applicant argues that the term “micro trench” implies the absence of matter, while the term “alignment layer” implies the presence of matter.

Applicant is respectfully apprised that alignment layers contain aligned microtrenches which align the liquid crystal. Applicant is respectfully directed to US 5,486,403 (abstract), provided as evidence, that this is the general mechanism by which liquid crystals are aligned by alignment layers.

5. Applicant argues that Georger, Jr. and Kawata are not analogous art in that Georger, Jr. is concerned with patterned surfaces for selective adhesion and outgrowth for cells, and Kawata is concerned with an optical compensatory sheet with a liquid crystal display.

Applicant is respectfully apprised that Georger, Jr. teaches the alignment (placement) of cells within lithographically defined physical barriers such as microtrenches or wells, and onto substrate-embedded microelectrodes, which permits the precise positioning and controlled growth of cells (column 15, lines 55-70), thereby addressing the problem of precise alignment of cells on a surface. Kawata teaches that the alignment defect for an alignment layer, for aligning liquid crystal, formed with the azobenzene chromophore (column 17, lines 1-15) is lower than one formed without (column 17, lines 15-25), thereby addressing the problem of precise alignment of liquid crystal on a surface. Both Georger, Jr. and Kawata address a common problem, which is the precise positioning, or alignment, of components on a surface, and are

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therefore analogous art. It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See MPEP 2141.01(a)[R-2].

6. Applicant argues that furthermore, even if the combination of references had included Grainger, which teaches that the ultra thin film may be functionalized by a liquid crystal molecule, and useful points of attachment for cell growth, no mention is made of a liquid crystal (as a point of attachment for cell growth).

Applicant is directed to the discussion of Georger, Jr. in view of Kawata above. Furthermore, Applicant is respectfully apprised that Grainger teaches that the polymer is bound across the surface of a substrate in a predetermined alignment (pattern) as points of attachment for cell growth (column 15, lines 10-20), thereby addressing the problem of the positioning, or the alignment, of components (cells) on a surface. Grainger is therefore analogous art.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5,486,403 is a teaching reference cited to provide evidence that an alignment layer contains microtrenches, or microgrooves on the surface, for aligning liquid crystal.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sow-Fun Hon

03/28/05


HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

3/29/05